

Claims under 34 articles

1. (Amended)

An impurity introducing method, including  
a first plasma irradiation step of carrying out plasma  
5 irradiation for realization of amorphous in which a surface of  
a semiconductor substrate is changed to an amorphous situation,  
and a second plasma irradiation step of carrying out plasma doping  
impurities so as to form a shallow junction in the semiconductor  
substrate, and  
10 including a resetting step of resetting a plasma  
irradiation condition, on the occasion of shifting from the first  
plasma irradiation step to the second plasma irradiation step,  
wherein the resetting step includes a step of resetting  
an initial condition of a plasma generation source so as to adapt  
15 to plasma which is used in each step.

2. (Deleted)

3. (Amended)

20 The impurity introducing method as set forth in Claim 1,  
wherein the resetting step includes a step of resetting an initial  
condition of a matching point of a matching circuit so as to  
adapt to plasma which is used in each step.

25 4. The impurity introducing method as set forth in any one

of Claims 1 through 3, wherein the resetting step includes a step of stopping electric discharge once and then, resetting it, on the occasion of shifting from the first plasma irradiation step to the second plasma irradiation step.

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5. The impurity introducing method as set forth in any one of Claims 1 through 3, wherein the resetting step includes a step of decreasing and changing bias power and thereafter, applying desired bias power, on the occasion of shifting from  
10 the first plasma irradiation step to the second plasma irradiation step.

6. The impurity introducing method as set forth in any one of Claims 1 through 3, wherein the resetting step includes a  
15 step includes one of increasing pressure and changing other conditions except pressure, and thereafter, setting desired pressure, on the occasion of shifting from the first plasma irradiation step to the second plasma irradiation step.

20 7. The impurity introducing method as set forth in any one of Claims 1 through 6, characterized in that the second plasma irradiation step is carried out after the first plasma irradiation step.

25 8. The impurity introducing method a set forth in Claim 7,

wherein it is configured in such a manner that the first plasma irradiation step is carried out after the second plasma irradiation step.

5    9.    The impurity introducing method as set forth in any one of Claims 1 through 63, wherein it is configured in such a manner that the first plasma irradiation step is carried out prior to the second plasma irradiation step.

10   10.   The impurity introducing method as set forth in any one of Claims 1 through 9, characterized in that gas seed, which is used in the first plasma irradiation step, includes helium and neon.

15   11.   The impurity introducing method as set forth in any one of Claims 1 through 9, wherein gas seed, which is used in the second plasma irradiation step, includes at least one of a group comprising Ar, Kr, Xe, and Rn.